

P1 Assignment

Ian Davis

CEG3900

01/19/17

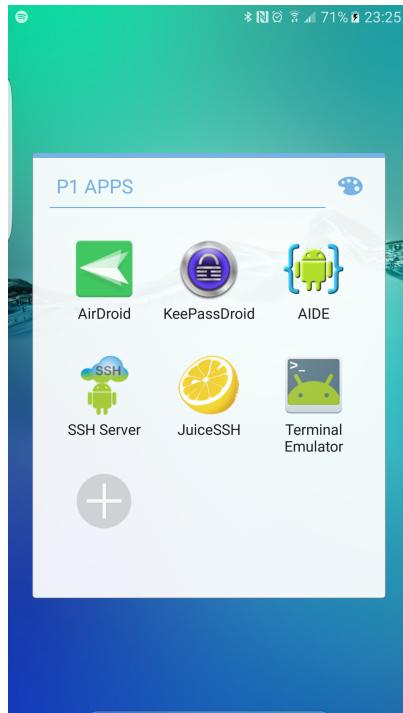
Device Setup

All work was done on a MacBook Pro running Ubuntu 16.04 in conjunction with a Samsung Galaxy S6 Edge.

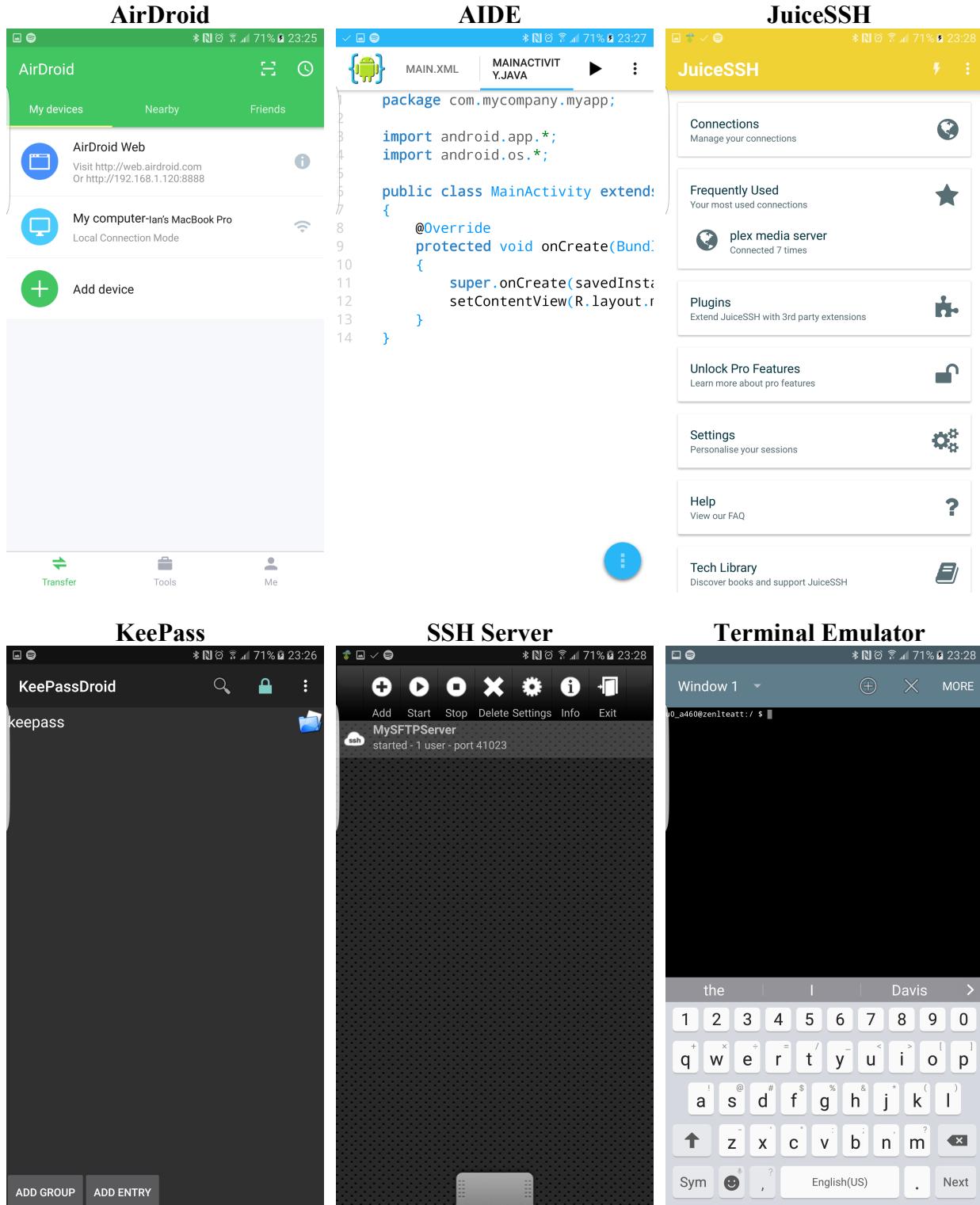
Task 1

APKs Installed:

- AirDroid
- KeePassDroid
- AIDE
- SSH Server
- JuiceSSH
- Terminal Emulator



Running Apps



Experience

AirDroid: Very useful app, I have experience with using a web-based app (Pushbullet) that functions similarly, but having a desktop application is slightly more convenient to operate, and this apk supports transferring files between devices which is also very helpful.

KeePassDroid: The user interface for this apk is not very appealing, and it also doesn't offer much in the way of explaining how exactly it's working. There doesn't seem to be an easy and intuitive way to add accounts to the database other than manually entering in all the details (including URLs) which makes it notably worse than other similar tools.

AIDE: This apk tries it's best to block you behind paywalls. Popups to upgrade to the pro version appear every time you start the apk, open a project, or try to run it. The user interface for the apk works as well as it could on a phone, but it could use work on its auto-completion support.

SSH Server: This apk didn't have support to run an SSH server on my device, but it did allow me to setup an sftp server. Running an SFTP server on a phone is a unique idea and provides an easier way (in certain situations) to transfer files onto another device. The apk itself is well designed and offers a lot of customization.

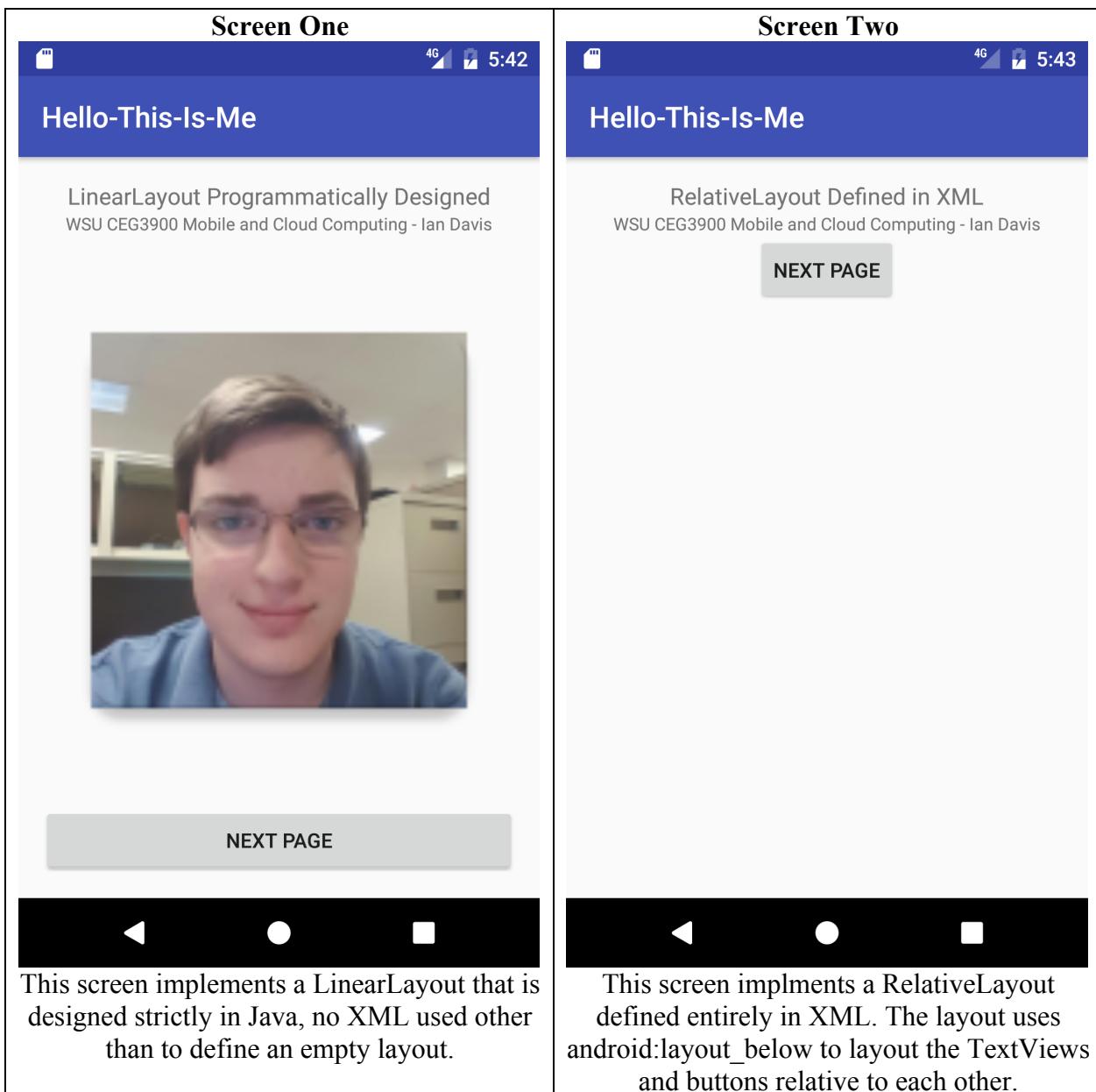
JuiceSSH: I have used this apk for quite a while now, in order to access a media server I operate from home remotely. It is well designed and functions well with SSH keys and remote hostnames.

Terminal Emulator: This apk is simple and elegant, and does exactly what it claims. Support for multiple windows makes multitasking easier, and the terminal display is clean and easy to operate.

Task 2

I chose to use the IntelliJ IDEA Ultimate IDE to create this android application. Setup was very straightforward, though I did have some initial permission issues when installing the sdk to /usr/local/android-sdk.

Running APK



Screen Three



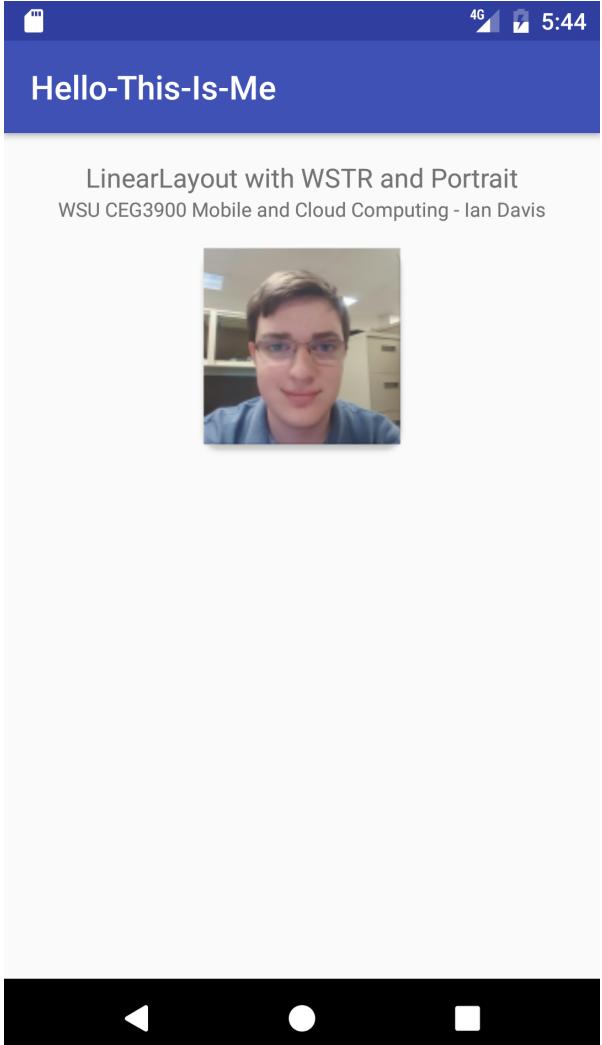
Screen Four



This screen implements a RelativeLayout in XML that includes an ImageView with a photo of myself.

This screen implements a RelativeLayout including the photo and the WSTR text. It is defined mostly in XML, other than using click handlers to transition to Screen Five.

Screen Five



This screen implements a LinearLayout in XML that also includes the photo and the WSTR text laid out vertically. This shows the different approaches to laying out interfaces in android framework.

Task 3

APK Built: Orfox (<https://github.com/guardianproject/tor-browser>)

Steps Taken

1. Clone source code through git: **git clone <https://github.com/guardianproject/tor-browser>**
2. Install autoconf from apt-get: **sudo apt-get install autoconf** [no effect]
3. Exported MOZCONFIG environment variable: **export MOZCONFIG=".mozconfig"**
4. Ran mach configure: **./mach configure** [errors: could not find autoconf123]
5. Install python bootstrap: wget -O bootstrap.py <https://hg.mozilla.org/mozilla-central/raw-file/default/python/mozboot/bin/bootstrap.py && python bootstrap.py> [cancelled, not necessary]
6. Install autoconf123 as documented on Mozilla: https://developer.mozilla.org/en-US/docs/Mozilla/Developer_guide/Build_Instructions/Linux_Prerequisites
7. Run mach configure: **../mach configure** [errors: android SDK must be specified from command line]
8. Run mach configure: **./mach configure --with-android-sdk=/usr/local/android-sdk** [errors: --with-android-sdk is an invalid argument]
9. Install the Android NDK from <https://developer.android.com/ndk/index.html>
10. Edit the .mozconfig file in the root of the tor-browser source: Changing the following lines like so:
 - a. **ac_add_options --with-android-ndk="/usr/local/android-ndk" #Enter the android ndk location(ndk r8e)**

- b. ac_add_options --with-android-sdk="/usr/local/android-sdk" #Enter the android sdk location
11. Build a standalone android NDK toolchain for the arm architecture:
/make_standalone_toolchain.py --arch x86_64 [errors: not the expected architecture]
12. Point .mozconfig to the standalone android NDK toolchain with –with-android-toolchain
13. Build a standalone android NDK toolchain for the arm architecture:
/make_standalone_toolchain.py --arch arm
14. Point .mozconfig to the standalone android NDK toolchain with –with-android-toolchain
15. Run mach configure: ./mach configure [errors: android SDK path is invalid]
16. Android SDK path in .mozconfig needs to point to the correct platform:
/usr/local/android-sdk/platforms/android-25
17. Run mach configure: ./mach configure [errors: The android v4 support library is required]
18. The android support library expected for this project is deprecated and not even offered anymore, so some hack magic is necessary to get this to work.
- a. Take support-v4-25-1.0.aar from /usr/local/android-sdk/extras/android/m2repository/com/android/support/support-v4/25.1.0/, copy it to /usr/local/android-sdk/extras/android/support/v4/android-support-v4.jar
19. Run mach configure: ./mach configure [success!]
20. Run mach build: ./mach build [errors: conflicting types for malloc_usable_size in jemalloc.c]
21. Edit the C source file located at tor-browser/memory/mozjemalloc/jemalloc.c, comment out the function definition malloc_usable_size_impl at line 6529.

22. Run mach build: ./mach build [errors: undefined reference to getdtablesize]
23. Edit the header file located at tor-browser/security/manager/android_stub.h
 - a. Remove the line starting with if ANDROID_VERSION >= 21
24. Edit the source file located at tor-browser/security/nss/unix_random.c
 - a. Find the line containing ndesc = getdtablesize();
 - b. Change the line to ndesc = sysconf(_SC_OPEN_MAX);
25. Remove deprecated/broken code from evutil_rand.c in tor-browser/ipc/chromium/src/third_party
 - a. Remove/comment out the evutil_secure_rng_add_bytes function.
26. The android support library JAR is invalid, download the deprecated android support library v4 from here
<http://www.java2s.com/Code/Jar/a/Downloadandroidsupportv4jar.htm>
27. Remove a configuration parameter from the makefile located at tor-browser/config/android_common.mk
 - a. From the JAVAC_FLAGS declaration, remove the line containing “-WError” this removes deprecation warnings based on an older version of java.
28. Checkout the orfox build project from git (<https://github.com/guardianproject/Orfox.git>)
29. cd /opt
30. wget https://dl.google.com/android/android-sdk_r24.3.4-linux.tgz
31. tar xzf android-sdk_r24.3.4-linux.tgz
32. export ANDROID_HOME=/opt/android-sdk-linux
33. export PATH="\$ANDROID_HOME/tools:\$PATH"
34. android update sdk --no-ui --filter tools,platform-tools,build-tools-23.0.1,android-22

```
35. cd $ANDROID_HOME  
36. mkdir -p extras/android  
37. cd extras/android  
38. wget https://dl.google.com/android/repository/support_r22.2.1.zip  
39. unzip support_r22.2.1.zip  
40. chmod -R a+rX $ANDROID_HOME  
41. find $ANDROID_HOME -executable |xargs chmod a+x
```

Task 4

Script started on Wed 25 Jan 2017 12:30:50 AM EST

```
ian@ubuntu:~/Android/Sdk/platform-tools$ ./adb -d install ~/IntelliJIDEAProjects/Hello-This-  
Is-Me/app/build/outputs/apk/HelloThisIsMe.apk
```

```
[ 4%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 8%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 12%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 17%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 21%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 25%] /data/local/tmp>HelloThisIsMe.apk
```

```
[ 29%] /data/local/tmp>HelloThisIsMe.apk
```

[34%] /data/local/tmp/HelloThisIsMe.apk

[38%] /data/local/tmp/HelloThisIsMe.apk

[42%] /data/local/tmp/HelloThisIsMe.apk

[47%] /data/local/tmp/HelloThisIsMe.apk

[51%] /data/local/tmp/HelloThisIsMe.apk

[55%] /data/local/tmp/HelloThisIsMe.apk

[59%] /data/local/tmp/HelloThisIsMe.apk

[64%] /data/local/tmp/HelloThisIsMe.apk

[68%] /data/local/tmp/HelloThisIsMe.apk

[72%] /data/local/tmp/HelloThisIsMe.apk

[77%] /data/local/tmp/HelloThisIsMe.apk

[81%] /data/local/tmp/HelloThisIsMe.apk

[85%] /data/local/tmp/HelloThisIsMe.apk

[89%] /data/local/tmp/HelloThisIsMe.apk

[94%] /data/local/tmp/HelloThisIsMe.apk

[98%] /data/local/tmp/HelloThisIsMe.apk

[100%] /data/local/tmp/HelloThisIsMe.apk

pkg: /data/local/tmp/HelloThisIsMe.apk

Success

```
ian@ubuntu:~/Android/Sdk/platform-tools$ ./adb -d shell
```

```
shell@zenlteatt:/ $ ls /system/bin
```

acpi

am

androidshmservice

apaservice

app_process

app_process32

app_process64

applypatch

appops

appwidget

argosd

at_distributor

atrace

auditd

basename

bcc

bcm_sensorhub_a2.patch

bintvoutservice

blkid

blockdev

bmgr

bootanimation

bootchecker

bu

bugreport

bzcat

cal

cat

ccm_gen_cert

cellgeofenced

charon

chcon

chgrp

chmod

chown

chroot

cksum

clatd

clear

cmp

comm

connfwexe

content

cp

cpio

cs

cut

dalvikvm

dalvikvm32

dalvikvm64

date

dd

ddexe

debuggerd

debuggerd64

dex2oat

df

dhcpcd

diagexe

dirname

dmesg

dnsmasq

dos2unix

dpm

drmserver

du

dumpstate

dumpsyst

e2fsck

echo

edmaudit

egrep

env

epmlogd

expand

expr

exyrngd

fallocate

false

fgrep

find

fingerprintd

free

fsck.exfat

fsck.f2fs

fsck_msdos

gatekeeperd

getenforce

getevent

getprop

gps.cer

gpsd

grep

groups

gzip

head

hid

hostapd

hostname

hwclock

icd

id

idmap

ifconfig

iftop

ime

imsd

inotifyd

input

insmod

install-recovery.sh

installd

insthk

ioctl

ionice

ip

ip6tables

iptables

jackd

jackservice

keystore

kill

ld.mc

lhfd

linker

linker64

lmkd

ln

load_policy

log

logcat

logd

logname

logwrapper

losetup

lpm

ls

lsmod

lsof

lsusb

macloader

make_ext4fs

make_f2fs

mcDriverDaemon

md5sum

mdnsd

media

mediaserver

mfgloader

mkdir

mkfs.exfat

mknod

mkswap

mktemp

modinfo

monkey

more

mount

mountpoint

mtpd

mv

nandread

ndc

netd

netstat

newfs_msdos

nice

nl

nohup

npsmobex

oatdump

od

olsrd

otp_server

paste

patch

patchoat

pgrep

pidof

ping

ping6

pkill

pm

pmap

pppd

prepare_param.sh

printenv

printf

prlimit

ps

pwd

qemu-props

qemud

racoon

readlink

realpath

reboot

renice

requestsync

resetreason

resize2fs

restorecon

rild

rm

rmdir

rmmod

route

rtc_log.sh

run-as

runcon

samsungpowersoundplay

schedtest

screencap

screenrecord

scs

sdcard

sdp_cryptod

secdiscard

secure_storage_daemon

secure_storage_pm

sed

sem_daemon

sendevent

sensorhubservice

sensorbservice

seq

service

servicemanager

setenforce

setprop

setsid

settings

sfotahelper

sgdisk

sh

sha1sum

sleep

sm

smdexe

sort

split

ss_conn_daemon

ss_kbservice_daemon

start

stat

stop

strings

surfaceflinger

svc

swapoff

swapon

sync

sysctl

tac

tail

tar

taskset

tc

tee

telecom

timax_dump_log

time

timeout

tlc_server

toolbox

top

touch

toybox

tr

true

truncate

tzdatacheck

uiautomator

umount

uname

uncrypt

uniq

unix2dos

uptime

usleep

vdc

vmstat

vold

vpncclientd

watchprops

wc

which

whoami

wlandutservice

wm

wpa_supplicant

wvkprov

xargs

yes

shell@zenlteatt:/ \$ ls /system/b xbin

cpustats

dexdump

jack_connect

jack_disconnect

jack_lsp

jack_showtime

jack_simple_client

jack_transport

jackc

shell@zenlteatt:/ \$ df -k

/mnt/knox/default/knox-emulated: Permission denied

/mnt/knox/read/knox-emulated: Permission denied

/mnt/knox/write/knox-emulated: Permission denied

/mnt/runtime/default/emulated: Permission denied

/mnt/runtime/read/emulated: Permission denied

/mnt/runtime/write/emulated: Permission denied

Filesystem	Size	Used	Free	Blksize
/dev	1875508.0K	140.0K	1875368.0K	4.0K
/sys/fs/cgroup	1875508.0K	12.0K	1875496.0K	4.0K
/mnt	1875508.0K	0.0K	1875508.0K	4.0K
/system	4099832.0K	3887668.0K	212164.0K	4.0K
/efs	16048.0K	3224.0K	12824.0K	4.0K
/cache	1015704.0K	5892.0K	1009812.0K	4.0K
/data	56471880.0K	20593304.0K	35878576.0K	4.0K
/cpefs	6032.0K	4624.0K	1408.0K	4.0K

/persdata/absolute	5032.0K	52.0K	4980.0K	4.0K
/storage	1875508.0K	0.0K	1875508.0K	4.0K
/mnt/knox	56471880.0K	20593304.0K	35878576.0K	4.0K
/mnt/shell/enc_media	56451400.0K	20614808.0K	35836592.0K	4.0K
/data/enc_user	56471880.0K	20593304.0K	35878576.0K	4.0K
/mnt/shell/enc_emulated	56451400.0K	20614808.0K	35836592.0K	4.0K
/storage/emulated	56451400.0K	20614808.0K	35836592.0K	4.0K

1|shell@zenlteatt:/ \$ exit

Task 5

10 Image files were uploaded to cloud storage accounts on both Dropbox and Google Drive

Dropbox > School > CEG3900

Name	Modified	Size
Aerial07.jpg	11 mins ago	5.69 MB
Aerial03.jpg	11 mins ago	5.50 MB
Aerial102.jpg	11 mins ago	4.48 MB
Cosmos04.jpg	11 mins ago	3.95 MB
Aerial109.jpg	11 mins ago	3.60 MB
Aerial06.jpg	11 mins ago	2.94 MB
Cosmos03.jpg	11 mins ago	2.82 MB
Aerial01.jpg	12 mins ago	2.64 MB
Cosmos02.jpg	11 mins ago	2.45 MB
Aerial08.jpg	11 mins ago	1.47 MB

Google Drive

My Drive > CEG3900

Name	Owner	Last modified	File size
Aerial01.jpg	me	2:24 PM	3 MB
Aerial02.jpg	me	2:24 PM	4 MB
Aerial03.jpg	me	2:24 PM	6 MB
Aerial06.jpg	me	2:24 PM	3 MB
Aerial07.jpg	me	2:24 PM	6 MB
Aerial08.jpg	me	2:26 PM	1 MB
Aerial09.jpg	me	2:24 PM	4 MB
Cosmos02.jpg	me	2:26 PM	2 MB
Cosmos03.jpg	me	2:26 PM	3 MB
Cosmos04.jpg	me	2:26 PM	4 MB

Commands run to connect and execute on the AWS EC2 VM

```
[Ians-MacBook-Pro:aws ian$ ./ssh-aws.sh
The authenticity of host 'ec2-52-27-143-220.us-west-2.compute.amazonaws.com (52.27.143.220)' can't be established.
ECDSA key fingerprint is SHA256:fnPAiX/FhtTcS7kAN/BnGFJS1pCJZo9Idxq0+hH9xgQ.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-52-27-143-220.us-west-2.compute.amazonaws.com,52.27.143.220' (ECDSA) to the list of known
hosts.
Welcome to Ubuntu 14.04.5 LTS (GNU/Linux 3.13.0-107-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

 System information as of Tue Jan 24 19:07:48 UTC 2017

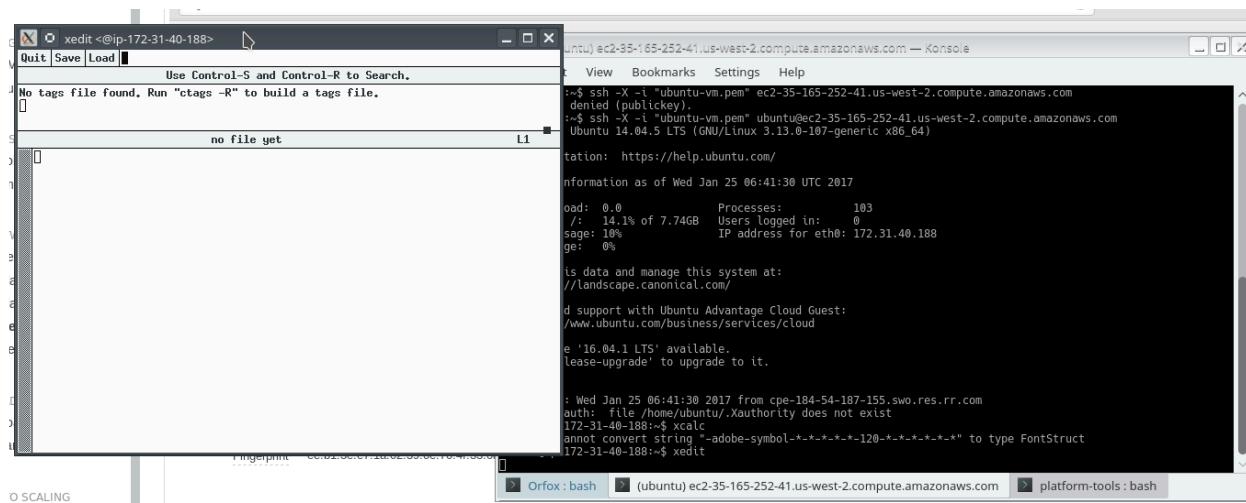
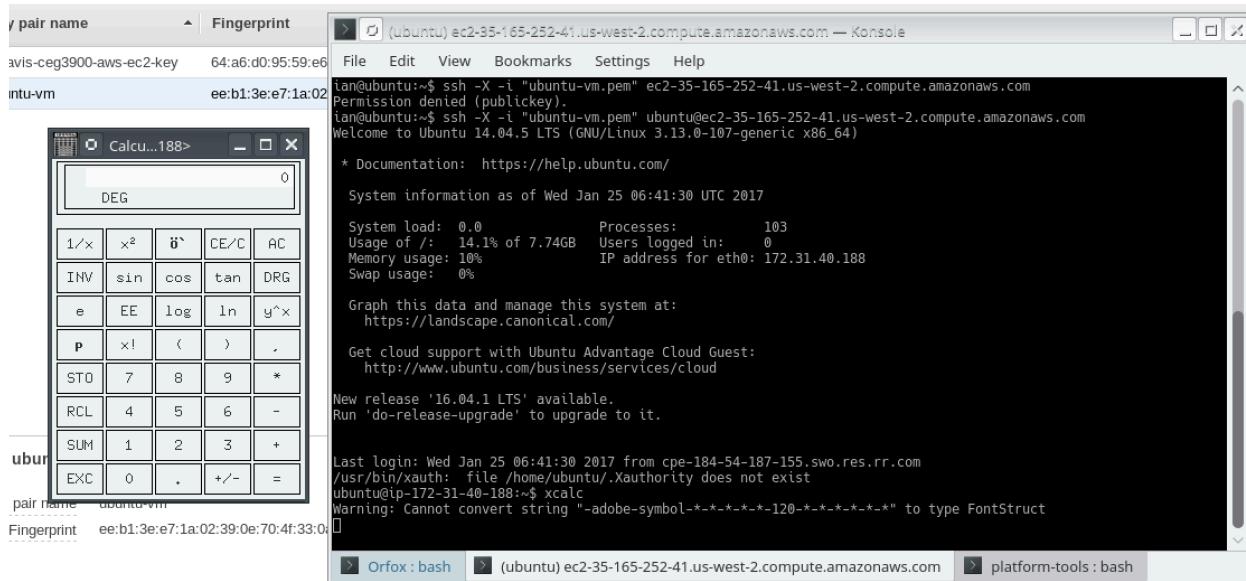
 System load: 0.0          Memory usage: 5%   Processes:      82
 Usage of /:  10.1% of 7.74GB Swap usage:  0%   Users logged in: 0

 Graph this data and manage this system at:
 https://landscape.canonical.com/

 Get cloud support with Ubuntu Advantage Cloud Guest:
 http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.
```

```
[ubuntu@ip-172-31-40-188:~$ ps -aux
USER     PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root      1  0.0  0.2 33504  2824 ?        Ss 19:07  0:01 /sbin/init
root      2  0.0  0.0    0   0 ?        S 19:07  0:00 [kthreadd]
root      3  0.0  0.0    0   0 ?        S 19:07  0:00 [ksoftirqd/0]
root      4  0.0  0.0    0   0 ?        S 19:07  0:00 [kworker/0:0]
root      5  0.0  0.0    0   0 ?        S< 19:07  0:00 [kworker/0:0H]
root      6  0.0  0.0    0   0 ?        S 19:07  0:00 [kworker/u30:0]
root      7  0.0  0.0    0   0 ?        S 19:07  0:00 [rcu_sched]
root      8  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/0]
root      9  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/1]
root     10  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/2]
root     11  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/3]
root     12  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/4]
root     13  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/5]
root     14  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/6]
root     15  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/7]
root     16  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/8]
root     17  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/9]
root     18  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/10]
root     19  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/11]
root     20  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/12]
root     21  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/13]
root     22  0.0  0.0    0   0 ?        S 19:07  0:00 [rcuos/14]
```



Worms12 Build and run

